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EXAMINER
FIGUEROA, NATALIA

ART UNIT	PAPER NUMBER
2697	6

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/905,604	Applicant(s) MOLINE ET AL.
	Examiner Natalia Figueroa	Art Unit 2697

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-34 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1-2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 2, 3, 4, 5, 6, 7, 12, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 28 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Billings et al., Patent No. 6,249,393.

Regarding claim 1, Billings et al. disclose a method for detecting a high flying condition in a disk drive (Column 8, Lines 61-64) comprising:

comparing an observed value derived from a signal corresponding to a flying height of a transducer head over a disk surface to a stored value (Column 8, Lines 52-56); and

generating a signal indicating a high flying condition if said comparison is unfavorable (Column 8, Lines 59-64).

Regarding claim 2, Billings et al. further disclose the method, wherein said stored value comprises a reference value (Column 7, Lines 58-60).

Regarding claim 3, Billings et al. further disclose the method, wherein said stored value comprises a reference value plus a marginal value (Column 9, Lines 58-59).

Regarding claim 4, Billings et al. further disclose the method, wherein said observed value is derived from information stored on said disk (Column 7, Lines 58-64).

Regarding claim 5, Billings et al. further disclose the method; wherein said information used to derive said observed value is used to derive said stored value (Column 7, Lines 58-63).

Regarding claim 6, Billings et al. further disclose the method; wherein said information is stored at a specific location on said disk (Column 9, Lines 4-9).

Regarding claim 7, Billings et al. further disclose the method, wherein said observed value is derived from an amplitude produced in a channel by a servo sector position burst (Column 7, Lines 29-32).

Regarding claim 12, Billings et al. further disclose the method, wherein said comparison is unfavorable if said observed value is less than said stored value (Column 10, Lines 44-55).

Regarding claim 14, Billings et al. further disclose the method, wherein said reference value is derived from information stored on said disk (Column 7, Lines 24-26).

Regarding claim 15, Billings et al. disclose a method for detecting whether a flying height of a transducer head over a disk surface in a disk drive exceeds a desired amount comprising:

selecting a standard transducer head flying height number, wherein said standard transducer head flying height number is based on an amplitude of a signal derived from a selected item of data written to said disk (Column 7, Lines 24-26);

storing said selected standard transducer head flying height number on said disk (Column 9, Lines 4-9);

reading an amplitude of said signal derived from said selected item of data written to said disk to obtain an observed transducer head flying height number (Column 7, Lines 58-64);

comparing said selected standard transducer head flying height number to said observed transducer head flying height number (Column 8, Lines 52-56); and

signaling a high fly write condition if said comparison indicates a high fly write event (Column 8, Lines 59-64).

Regarding claim 16, Billings et al. further disclose the method, wherein said step of selecting a standard transducer head flying height number for a signal derived from a selected item of data written to said disk comprises (Column 7, Lines 24-26) reading an amplitude of a signal derived from said selected item of data and setting said read amplitude derived from said standard transducer head equal to said standard transducer head flying height number (Column 7, Lines 58-64).

Regarding claim 17, Billings et al. further disclose the method, wherein said step of selecting a standard transducer head flying height number for a signal derived from a selected item of data written to said disk comprises:

reading an amplitude of a signal derived from said selected item of data (Column 7, Lines 58-64);

adding a marginal value to said amplitude (Column 9, Lines 58-59); and

setting said sum equal to said standard transducer head flying height number (Column 9, Lines 60-63).

Regarding claim 21, Billings et al. further disclose the method, wherein said step of selecting a standard transducer head flying height number is performed prior to delivery of said disk drive to an end user (Column 9, Lines 32-35).

Regarding claim 22, Billings et al. further disclose the method, wherein said step of selecting a standard transducer head flying height number is performed prior to storing customer data on said disk (Column 9, Lines 32-35).

Regarding claim 23, Billings et al. further disclose the method, wherein at least one standard transducer head flying height number is selected for each of a plurality of tracks of said disk (Column 7, Lines 24-26).

Regarding claim 24, Billings et al. further disclose the method, wherein at least one standard transducer head flying height number is selected for a plurality of data sectors of said disk (Column 7, Lines 24-26).

Regarding claim 25, Billings et al. further disclose the method, wherein said step of comparing comprises subtracting said observed transducer head flying height number from said standard transducer head flying height number (Column 10, Lines 44-55).

Regarding claim 26, Billings et al. further disclose the method, wherein a high fly write event is indicated if said step of comparing results in a number that is positive (Column 10, Lines 44-55).

Regarding claim 28, Billings et al. further disclose the method, wherein said selected item of data is a servo sector position burst (Column 7, Lines 29-32).

Regarding claim 29, Billings et al. further disclose the method, wherein said selected item of data is a group of servo sector position bursts (Column 7, Lines 29-32).

2. Claims 30, 32, 33 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Carlson et al., Patent No. 5,909,330.

Regarding claim 30, Carlson et al. disclose a hard disk drive capable of detecting a high fly write condition (Column 5, Lines 5-6), comprising:

a base (Figure 1, Element 10);

a magnetic storage disk rotatably mounted to said base, wherein data is stored on said storage disk magnetically in concentric tracks (Column 7, Lines 1-2), and wherein said data stored on said storage disk includes high fly write reference data (Column 7, Lines 42-44);

an actuator arm pivotally mounted to said base (Column 5, Line 26);

a transducer head mounted to a first end of said actuator arm (Column 5, Line 26), wherein said transducer head is capable of reading information from and writing information to said magnetic storage disk (Column 5, Lines 42-44);

a voice coil motor for moving said first end of said actuator arm radially across said magnetic storage disk, wherein said transducer head is capable of addressing said concentric tracks (Column 5, Lines 42-44);

a controller for actuating said voice coil motor to position said transducer head over a selected concentric track (Column 5, Lines 45-49); and

a channel for transmitting a signal from said transducer head to a host computer and for transmitting a signal from said host computer to said transducer head (Column 5, Lines 33-34), wherein a signal read by said transducer head having an amplitude that is less than a reference amplitude stored on said disk indicates that said transducer head is in a high fly write condition (Column 8, Lines 12-32).

Regarding claim 32, Carlson et al. further disclose the disk drive, wherein said reference amplitude is stored in a hard sector of said disk (Column 8, Lines 27-28).

Regarding claim 33, Carlson et al. further disclose the disk drive, wherein said reference amplitude is stored in a data sector of said disk (Column 8, Lines 27-28).

Regarding claim 34, Carlson et al. further disclose the disk drive, wherein said reference amplitude is stored in a customer data region of said disk (Column 8, Lines 27-28).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 8, 9, 10, 11, 18, 19, 20 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Billings et al. in view of Carlson et al.

Regarding claim 8, Billings et al. fail to explicitly teach the method, wherein said observed value is derived from an amplitude produced in a channel by an automatic gain control field. However, this feature is well known in the art as evidenced by Carlson et al., which disclose an amplitude produced in a channel by an automatic gain control field (Column 8, Lines 4-9). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify Billings' et al. method to include producing amplitude means as taught by Carlson et al. The rationale being, one of ordinary skill in the art would have been motivated to produce an amplitude from the automatic control gain field in order to monitor these amplitude changes therefore representing the changes in the fly height of the head to make sure that the head is in an adequate read/write performance.

Regarding claim 9, Billings et al. fail to explicitly teach the method, wherein said stored value is stored on said disk in a hard sector. However, this feature is well known in the art as evidenced by Carlson et al., which disclose said stored value is stored on said disk in a hard sector (Column 8, Lines 27-29).

Regarding claim 10, Billings et al. fail to explicitly teach the method, wherein said stored value is stored on said disk in a servo in data sector. However, this feature is well known in the art as evidenced by Carlson et al., which disclose said stored value is stored on said disk in a servo in data sector (Column 8, Lines 27-29).

Regarding claim 11, Billings et al. fail to explicitly teach the method, wherein said stored value is stored on said disk in a data sector. However, this feature is well known in the art as evidenced by Carlson et al., which disclose said stored value is stored on said disk in a data sector (Column 8, Lines 27-29).

Regarding claim 18, Billings et al. fail to explicitly teach the method, wherein said step of storing said transducer head flying height number to said disk comprises storing said number in a hard sector of said disk. However, this feature is well known in the art as evidenced by Carlson et al., which disclose said step of storing said transducer head flying height number to said disk comprises storing said number in a hard sector of said disk (Column 8, Lines 27-29).

Regarding claim 19, Billings et al. fail to explicitly teach the method, wherein said step of storing said transducer head flying height number to said disk comprises storing said number in a data sector of said disk. However, this feature is well known in the art as evidenced by Carlson et al., which disclose said step of storing said transducer head flying height number to said disk comprises storing said number in a data sector of said disk (Column 8, Lines 27-29).

Regarding claim 20, Billings et al. fail to explicitly teach the method, wherein said data sector is located in a customer data region of said disk. However, this feature is well known in the art as evidenced by Carlson et al., which disclose said data sector is located in a customer data region of said disk (Column 8, Lines 27-29).

Regarding claim 27, Billings et al. fail to explicitly teach the method, wherein said selected item of data is an automatic gain control field. However, this feature is well known in the art as evidenced by Carlson et al., which disclose said selected item of data is an automatic gain control field (Column 8, Lines 4-9).

4. Claim 13 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Billings et al. and Carlson et al., and further in view of Gillis et al., Patent No.6,266,199.

Regarding claim 13, Billing et al. and Carlson et al. fail to explicitly teach the method, wherein said stored value encodes a numerical value. However, this feature is well known in the

art as evidenced by Gillis et al., which disclose encoding data (Column 4, Lines 62-64). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify Billings' et al. method to include encoding means as taught by Gillis et al. The rationale being, one of ordinary skill in the art would have been motivated to include encoding means to provide for amplitude sampling data detection.

Regarding claim 31, claim 31 has limitations similar to those treated in the above rejection, and is met that the references discussed above. Claim 31, however, recites a broader limitation of above rejected claim.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are mentioned and cited to further show the art with respect to fly height in disk drives, Egbert et al. Patent No. 5,410,439, Brown et al. Patent No. 4,777,544, Good et al. Patent No. 5,377,058, Ito Patent No. 6,014,282, Cowen Patent No. 5,760,983 and Okamura et al. Patent No. 5,831,781

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalia Figueroa whose telephone number is 703-305-1260. The examiner can normally be reached on Monday - Thursday 8:30-5:30; alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on 703-308-4825. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-6743 for regular communications and 703-308-6743 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

nfm
July 10, 2003

DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
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